

Communications and Control, Control Mini-thread Integration Vision Tracking & Landing on a Moving Target

This programme (CC021) aims to bring together developments from previous SEAS DTC projects to produce a demonstrator capable of landing a rotary wing UAV on a moving platform. The demonstrator will incorporate visual guidance algorithms for auto landing (Roke Manor Research), AgentBox processors (Blue Bear Systems Research), control system design (University of Bristol) and intimate control algorithms (MBDA).

The concept is that it is possible to visually track the movement of a ground vehicle from a camera mounted on a UAV. Using this information a control system will manoeuvre the UAV such that it lands on the moving ground vehicle. This has already been demonstrated in practice by the University of Bristol using a restricted 3 DoF (degree-of-freedom) rig within a lab environment, and at Roke using a 6 DoF computer simulation.

Aim

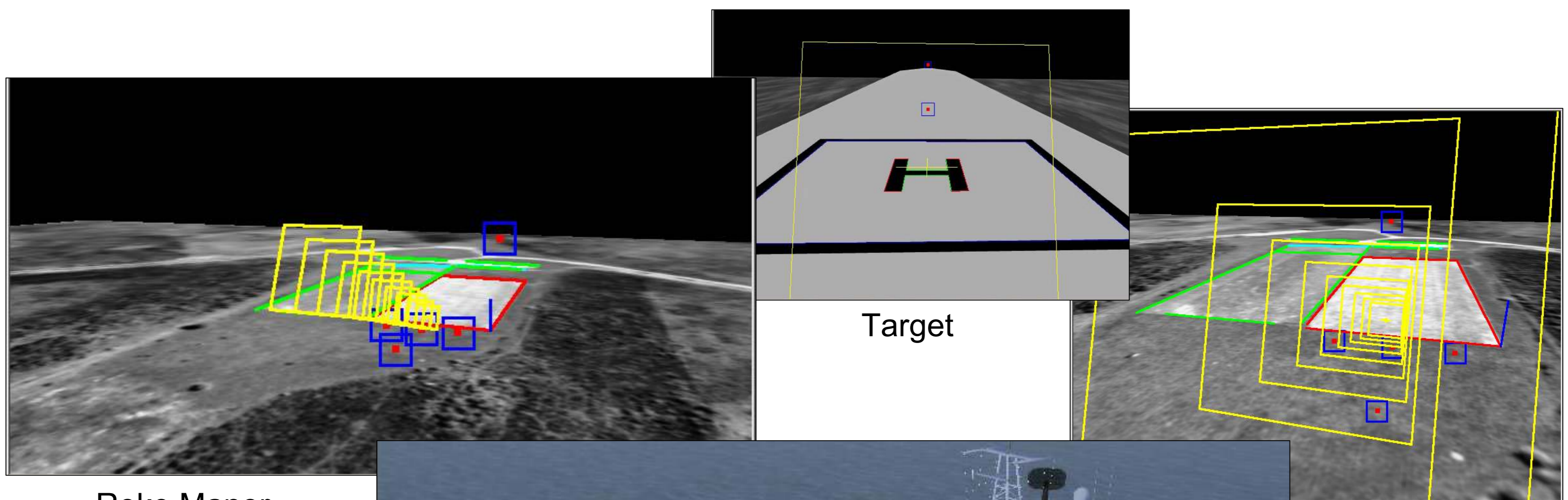
This proposed programme is intended to show that the recovery phase of a UAV to a moving ground vehicle is feasible and to demonstrate the outlines of one such approach which uses vision tracking.

Approach

Combine expertise and work from:
CC006 Auto-landing; CC010 Intimate Control;
SER004 Multi-agent Systems Engineering;
AA014 Visual Stabilisation of a Rotary Wing UAV

Outcomes

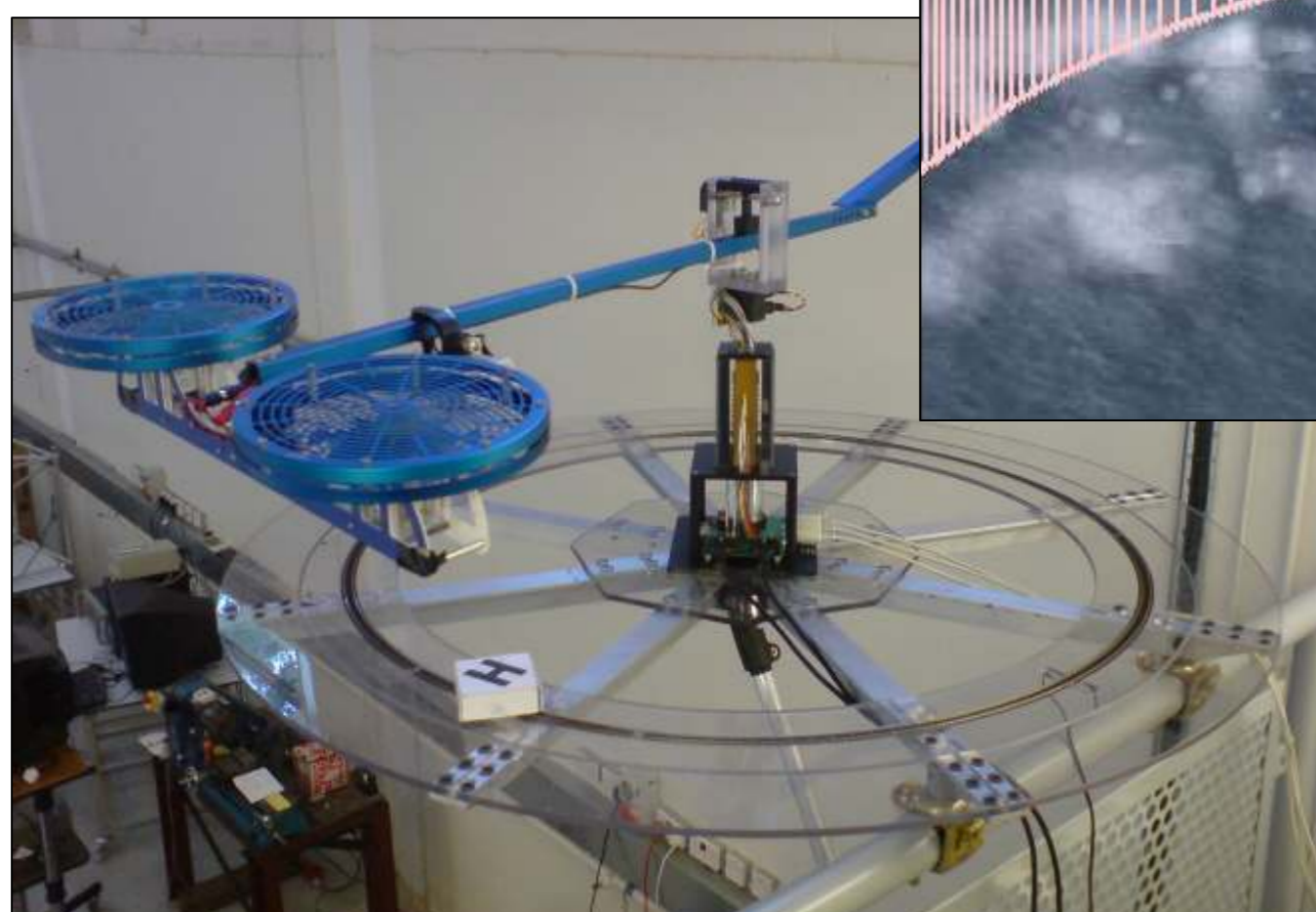
Simulation of the landing phase has been demonstrated using a real-time model of the SR20. Vision based tracking of a moving target has been demonstrated using a 3DOF Quanser helicopter.



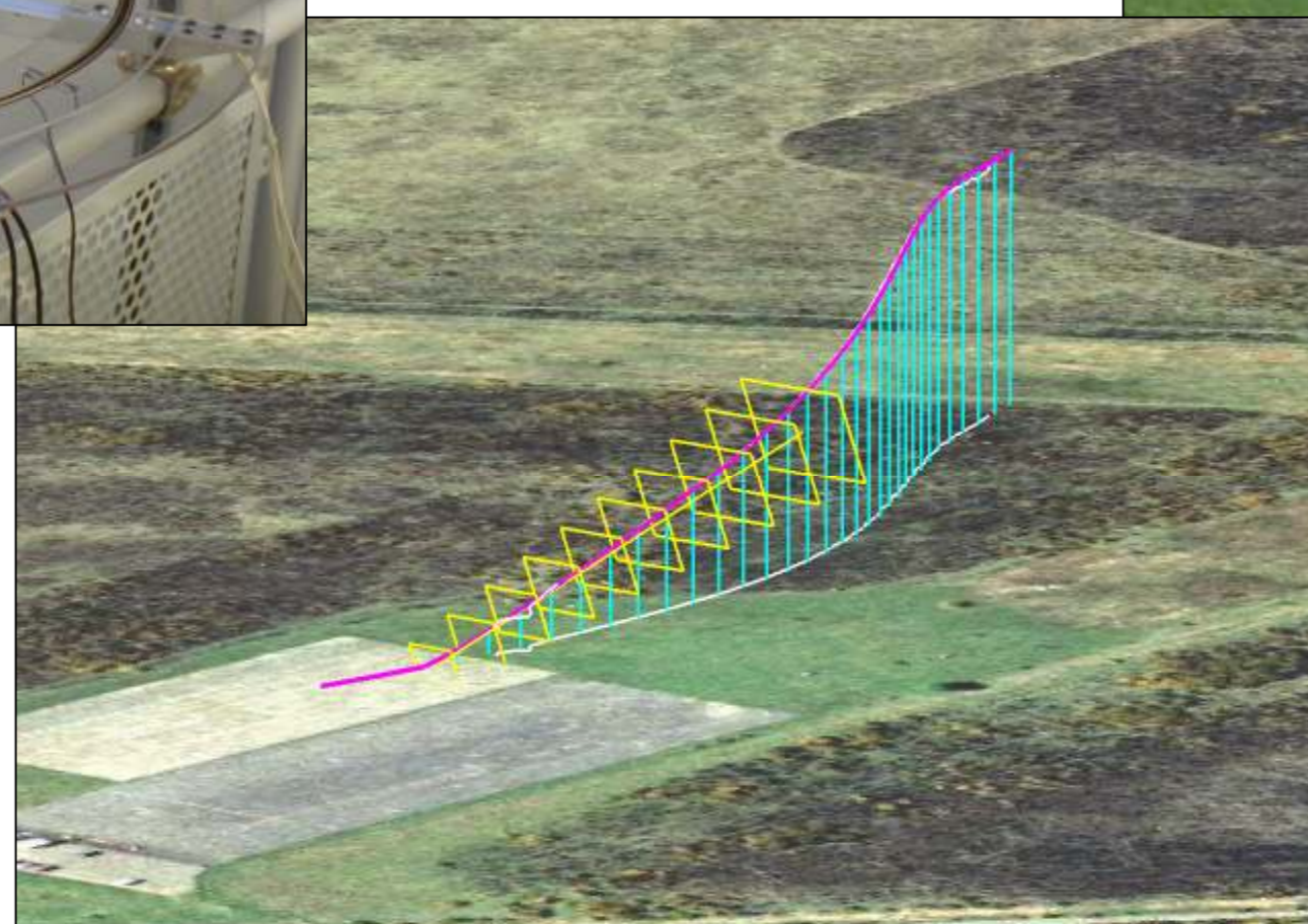
Roke Manor
Vision Tracker



Concept



Quanser 3DOF Demo



Approach



SR20

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